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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,189	09/09/2003	Joseph E. Legare	Legare-PAUS0003	1625
58937 7590 07/01/2008 WOLFF LAW OFFICE, PLLC P.O. BOX 9855 CHAPEL HILL, NC 27515-9855				
EXAMINER TRAN, DIEM T				
ART UNIT 3748		PAPER NUMBER		
MAIL DATE 07/01/2008		DELIVERY MODE PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/657,189

Applicant(s)

LEGARE, JOSEPH E.

Examiner

DIEM TRAN

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-16, 18-20, 24-33, 36, 38-40, 43-46, 50 and 51 is/are rejected.
- 7) ☒ Claim(s) 10, 17, 21-23, 34, 35, 37, 41, 42 and 47-49 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

In view of the Appeal Brief filed on 1/22/08, **PROSECUTION IS HEREBY REOPENED**. A new non-final rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Overall, claims 1-51 are pending in this application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 50 is rejected under 35 U.S.C. 102(b) as being anticipated by Yamashita et al. (US Patent 5, 727,383).

Yamashita discloses a method for diagnosing a condition of a catalyst while compensating for specified engine power changes, comprising the steps of providing a device for

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electrically controlling engine airflow changes; controlling said device for compensating adverse changes in cylinder intake airflow by use of specified conditions stored in memory, and diagnosing the condition of the catalyst (see col. 10, lines 1 +).

Claim 51 is rejected under 35 U.S.C. 102(b) as being anticipated by Pelters et al. (US Patent 5,435,172).

Pelters discloses a method of diagnosing a catalyst and reducing undesired gas emissions from the catalyst coupled to an internal combustion engine and a temperature sensor coupled to the catalyst by, including the steps of:

monitoring the catalyst temperature with the temperature sensor (12); changing at least one operating parameter of the engine to cause the temperature of the catalyst to rapidly rise when the chemical exothermic activity has started in the catalyst and engine operational conditions preclude establishing stoichiometric closed loop fuel control operation; and changing at least one operating parameter of the engine to achieve said stoichiometric in exhaust gases when the catalyst has reached a temperature needed to establish stoichiometric engine operation (see col. 2, lines 10+, col. 4, lines 18+).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 7-9, 11-16, 18, 20, 29-31, 36, 38-40, 43-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maus et al. (US Patent 5,610,844) in view of Pelters et al. (US Patent 5,435,172).

Regarding claims 1, 7, 9, 13, 14, 18, 20, 29-30, 36, 38-40, 43-46, Maus discloses a method of diagnosing a catalysts including the steps of:

detecting at least one parameter indicating operating conditions are sufficient for producing reliable diagnostic test results (see col. 7, lines 61-67, col. 8, lines 1-10); determining a first temperature characteristic of the catalyst; controlling a change in gas concentrations entering the catalyst so as to provide chemical conditions sufficient for generating the catalyst temperature above the first temperature; determining a second temperature characteristic of the catalyst; and comparing changes between first temperature characteristic and the second temperature characteristic to determine whether the catalyst is malfunctioning (see col. 3, lines 18-35); however, fails to disclose changing of conditions of selected individual cylinders to determine whether the catalyst is malfunctioning. Pelters teaches changing of conditions of selected individual cylinders to determine whether the catalyst is malfunctioning (see col. 2, lines 45-50, 55-66).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Pelters in the Maus for more efficient controlling the air fuel ratio to judge a condition of the catalyst.

Regarding claims 2, 31, Maus further discloses that the steps of determining a first derivative and a second derivative for the first and second temperature characteristic; and

determining if the catalyst is malfunctioning by using at least one of the first derivative and the second derivative (see col. 3, lines 36-50).

Regarding claim 8, Maus further discloses that a design of a catalytic converter that includes the catalyst is selected such that the step of comparing changes between the said first and the second temperature characteristics provide consistent and discernable differences between when the comparing is made using at least one reference catalytic converter known to be malfunction and at least one reference catalytic converter that is known to be marginally good (see col. 5, lines 8-18).

Regarding claims 11, 12, Maus further discloses that the air-fuel ratio characteristics of the gases' entering said catalyst are controlled to have frequency and magnitude characteristics selected so as to minimize perceptible changes in engine vibration (see col. 4, lines 5-20).

Regarding claims 15, 16, Maus further discloses that said change in gas concentrations entering said catalyst is selected to compensate for catalyst deterioration so as to minimize toxic air pollutants emitted from the vehicle's tailpipe (see col. 6, lines 1-13).

Claims 24-26, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto et al. (US Patent 5,591,905) in view of Pelters et al. (US Patent 5,435,172).

Regarding claims 24-26, 28, Fujimoto discloses a method of early cycling an oxygen sensor's output prior to stoichiometric closes loop fuel control operation to allow modifying the diagnosis of a catalyst's condition based upon cold start conditions, including the steps of:

monitoring engine exhaust gases with an oxygen sensor, detecting at least one parameter indicating engine operation outside a stoichiometric control range after a cold start; enabling a

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change in fuel quantity such quantity estimated to cause a defined oxygen sensor output change; modifying said quantity estimated for said change in fuel until causing a defined change in said oxygen sensor's output; and after repeating the steps for enabling a change and modifying the quantity so as to cause repetitive cycling of the oxygen sensor output about a defined threshold until at least one engine parameter reaches a predetermined value (see col. 9, lines 1+, col. 10, lines 1+); however, fails to disclose changing of conditions of selected individual cylinders to determine whether the catalyst is malfunctioning. Pelters teaches changing of conditions of selected individual cylinders to determine whether the catalyst is malfunctioning (see col. 2, lines 45-50, 55-66).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Pelters in the Fujimoto for more efficient controlling the air fuel ratio to judge a condition of the catalyst.

Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maus et al. (US patent 5,610,844) in view of Pelters et al. (US Patent 5,435,172) as applied to claim 1 above, and further in view of Holl (US Patent 3, 785,151).

Regarding claims 3, 4, 6, the modified Maus method discloses all the claimed limitations as discussed in claim 1 above, however, fails to disclose controlling a change in exhaust gas concentrations includes controlling a quantity of residual exhaust gas entering an engine's cylinder so as to modify concentrations of nitrogen oxides gases at the catalyst and assists determining whether the operation of said catalyst is malfunctioning based upon changes in temperature from the first and second temperature characteristics. Holl teaches that it is

conventional in the art, to control a change in exhaust gas concentrations includes controlling a quantity of residual exhaust gas entering an engine's cylinder so as to modify concentrations of nitrogen oxides gases at the catalyst (see col. 1, lines 42-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Holl in the modified Maus method for more efficiently controlling the air fuel ratio, so as to improve the exhaust gas pollution control.

Regarding claim 5, Maus further discloses that selecting a catalytic converter design including the catalyst so that the determining whether the operation of said catalytic converter is malfunctioning is more accurately detected (see col. 5, lines 8-18).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maus et al. (US patent 5,610,844) in view of Pelters et al. (US Patent 5,435,172) as applied to claim 11 above, and further in view of Fujimoto et al. (US Patent 5,591,905).

The modified Maus method discloses all the claimed limitations as discussed in claim 11 above, however, fails to disclose that determining whether the condition of said catalyst is malfunctioning are modified based upon monitoring an output of one or more oxygen sensors while controlling temporary changes in gas conditions to provide detectable differences between the oxygen sensors outputs during said modifying the rate of catalyst heating following cold engine starting. Fujimoto teaches determining the condition of said catalyst is malfunctioning based upon monitoring an output of one or more oxygen sensors while controlling temporary changes in gas conditions to provide detectable differences between the oxygen sensors outputs during said modifying the rate of catalyst heating following cold engine starting (see Figure 9).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Fujimoto in the modified Maus method since the use thereof would have provided an effective means to monitor a working condition of the catalyst.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto et al. (US Patent 5,591,905) Pelters et al. (US Patent 5,435,172) as applied to claim 24 above, and further in view of Yamashita et al. (US Patent 5,727,383).

The modified Fujimoto method discloses all the claimed limitations as discussed in claim 24 above, however, fails to disclose determining initiation of catalyst chemical exothermic activity is provided by detecting changes in exhaust gases' concentrations from gas sensors positioned to detect gases exiting said catalytic converter. Yamashita teaches that catalyst chemical exothermic activity is determining by detecting changes in exhaust gases' concentrations from gas sensors positioned to detect gases exiting said catalytic converter (see col. 9, lines 39-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Yamashita in the modified Fujimoto method, since the use thereof would have provided an effective means for determining the catalyst activation condition.

Claims 32, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maus et al. (US patent 5,610,844) in view of Pelters et al. (US Patent 5,435,172) as applied to claim 20 above, and further in view of Yamashita et al. (US Patent 5,727,383).

Regarding claims 32, 33, the modified Maus method discloses all the claimed limitations as discussed in claim 20 above, however, fails to disclose determining initiation of catalyst chemical exothermic activity is provided by detecting changes in exhaust gases' concentrations from gas sensors positioned to detect gases exiting said catalytic converter. Yamashita teaches that catalyst chemical exothermic activity is determining by detecting changes in exhaust gases' concentrations from gas sensors positioned to detect gases exiting said catalytic converter (see col. 9, lines 39-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Yamashita in the modified Maus method since the use thereof would have provided an effective means for determining the catalyst activation condition.

Allowable Subject Matter

Claims 10, 17, 21-23, 34, 35, 37, 41, 42, 47-49 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed on 1/22/08 have been fully considered but they are moot in

view of the new ground(s) of rejection. In the previous office action sent out on 5/17/07, claim 42 was overlooked by the examiner, so the previous office action is hereby withdrawn and a new final rejection is set forth above.

Conclusion

Any inquiry concerning this communication from the examiner should be directed to Examiner Diem Tran whose telephone number is (571) 272-4866. The examiner can normally be reached on Monday -Friday from 8:00 a.m.- 6:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (571) 272-4859. The fax number for this group is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 800-786-9199 (toll-free).

/Diem Tran/
Patent Examiner

/Thomas E. Denion/
Supervisory Patent Examiner, Art Unit 3748